(54) Power conversion apparatus

(57) Technology leading to a size reduction in a power conversion apparatus comprising a cooling function and technology relating to enhancing productivity and enhancing reliability necessary for commercial production are provided. Series circuits comprising an upper arm and lower arm of an inverter circuit are built in a single semiconductor module (500). The semiconductor module has cooling metal on two sides. An upper arm semiconductor chip and lower arm semiconductor chip are wedged between the cooling metals. The semiconductor module is inserted inside a channel case main unit (214). A DC positive electrode terminal (532), a DC negative electrode terminal (572), and an alternating current terminal (582) of a semiconductor chip are disposed in the semiconductor module. The DC terminals (532) and (572) are electrically connected with a terminal of a capacitor module. The alternating current terminal (582) is electrically connected with a motor generator via an AC connector.

FIG. 7
# PARTIAL EUROPEAN SEARCH REPORT

**Category**

<table>
<thead>
<tr>
<th>Citation of document with indication, where appropriate, of relevant passages</th>
<th>Relevant to claim</th>
<th>CLASSIFICATION OF THE APPLICATION (IPC)</th>
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<tr>
<td>Y,D</td>
<td>JP 2005 175163 A (TOYOTA MOTOR CORP) 30 June 2005 (2005-06-30) * abstract; figures 1-12 *</td>
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</table>

## INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R, 62a, 63) has been carried out.

Claims searched completely:

Claims searched incompletely:

Claims not searched:

Reason for the limitation of the search:

see sheet C

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**EP 1 956 649 A3**

**Application Number:** EP 08 00 0395

**Place of search:** Munich

**Date of completion of the search:** 23 December 2016

**Examiner:** Hanisch, Thomas

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**CATEGORY OF CITED DOCUMENTS**

- X: particularly relevant if taken alone
- Y: particularly relevant if combined with another document of the same category
- A: textual background
- O: non-written disclosure
- P: intermediate document

**CLASSIFICATION OF THE APPLICATION (IPC):**

- INV: invention
- H01L: electrical field
- H02M: mechanical field
- H05K: optical field

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**EP 08 00 0395 (A3)**
Claim(s) completely searchable:
   1, 4-9

Claim(s) not searched:
   2, 3, 10-17

Reason for the limitation of the search:

1    Clarity and Conciseness (Art. 84 EPC)
1.1 Claims 1, 2, 3, 10, 12 have been drafted as separate
     independent claims.
1.2 Under Article 84 in combination with Rule 43(2) EPC, an
     application may contain more than one independent claim in a particular
     category only if the subject-matter claimed falls within one or more of
     the exceptional situations set out in paragraph (a), (b) or (c) of Rule
     43(2) EPC. This is not the case in the present application.
2 Procedure
2.1 According to Rule 62a EPC the applicant is invited to
    indicate, within a period of two month, the claims complying with Rule
    43, paragraph 2, on the basis of which the search is to be carried out.
This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on.

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-12-2016

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For more details about this annex: see Official Journal of the European Patent Office, No. 12/82.